**Section 9 - Rotary Traffic Design**

**Section 9.1 - Road Intersections**

**Section 9.1.1 - Abstract**

Traffic rotary at road intersections is identified as a movement or form of specialized lane design and changing, channelizing the direction of traffic flow around a central island. This is an example of another more unconventional impact that the engineering of the rotary engine and its physical design has had on society. With the rise of traffic being experienced on roads throughout history, due to the growth of population and car manufacturing. Development of the road system is absolutely necessary to keep up with such a growing traffic population therefore, making widening of roads, flyovers and intersection design imperative.

Some of the major conflicts in traffic management is the collisions between right-turn movements (within the United States or left-hand-side driving). Furthermore, the merging and diverging causes similar major conflicts that must be minimised as best as possible using traffic engineering and intersection design.

**Section 9.1.2 - Introduction**

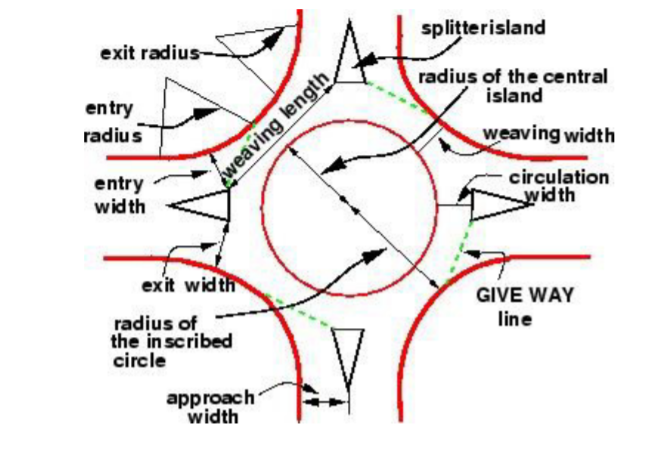
The rotary intersection is suitable for traffic entering from three or more approaches. The intersection is capable of handling approximately 3000 vehicles per hour. Separate lanes are available for right-turn traffic, thus making intersection complex.

There are three operations of the rotary intersection:

1. Diverging - vehicles moving in one direction is separated to different stems according to the desired destination.
2. Merging - process of joining the traffic coming from different approaches and aiming for a common goal or destination (into a single stream).
3. Weaving - is combined operation of both merging and diverging movements (in the same direction).

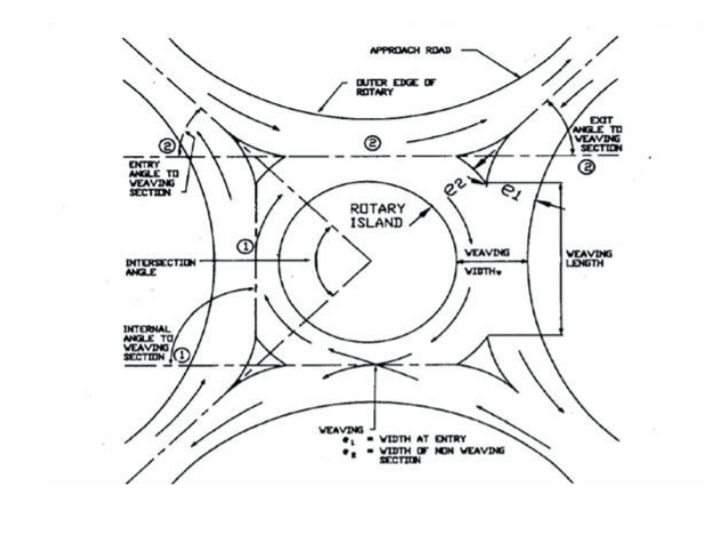
(Mahajan, Umadekarb and Jethwac, 2013)

**Section 9.2 - Rotary Intersection Design**

Design elements are required of the rotary intersection involve that of speed, radius (entry & exit) of the central island, weaving length and width and entry & exit widths. 

*Figure 1 - Design of Rotary Intersection*

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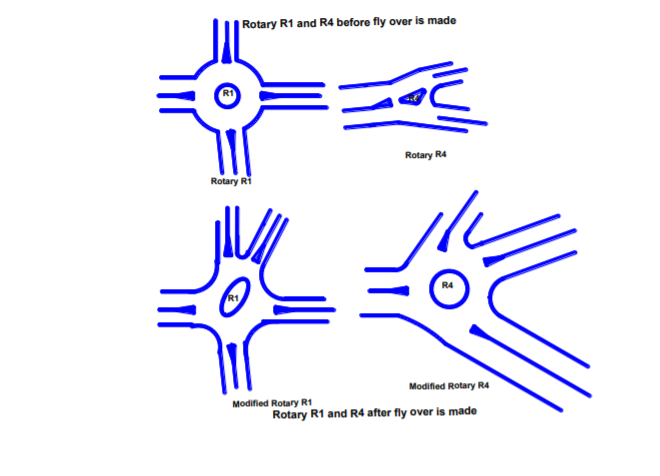


*Figure 2 - Design Parameters of a Rotary Intersection*

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**Section 9.2.1 - Rotary Intersection Concepts**

There are new developing concepts that have aimed to incorporate the rotary intersection into fly-overs, with the ultimate goal of maximising optimality through the use of mathematics and engineering. Furthermore, such calculations utilizing model data.



*Figure 3 - New Concept of Rotary Design*

[*Image Source*](https://pdf.sciencedirectassets.com/277811/1-s2.0-S1877042813X00291/1-s2.0-S1877042813024385/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEM3%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJGMEQCIEeuOe6B%2Bw1S8m%2FwGCaHfWFPwhK76IxLy1gktbYHQZHWAiBiSdqtghH7zGs%2BGURXnHBxnZTq0yGF%2F1s6BXW3BC6Tuyr6Awh2EAQaDDA1OTAwMzU0Njg2NSIMbDLpw4jjwhbJy0gZKtcDblB5s5sqAiALU17nydvOgWGjMmZxpnooSrr%2BFPLU2eiB793No9Gqoj1eNeflRGE1gD%2F3JgHK7ShCJSLkRzB1NwkVmx6PX01v6Z2fcZ9DtP2sCCf7Mf1z0DPUHFMDG%2BPogXh%2B5%2Fd55Vt%2Bmpcq3O60QmcfolO3tWDpcec%2FIjzN9lQswxG%2B9aH06y23zJph6qbBzpDdHNXFXYozOEiXiiolw4rzQ1iUgXUPwdYD%2BqeY1CqSGvONrRMNn0WuL6wD0k6wNFei88hJMt%2FOmJs%2BLT83BBp30%2FOYkx3gZB20CR4bRdaz0dYODOOx79OgIWgJX4rtuhslZbPJxqN3i4pgnrXNDzCYjnlnAAm0od6ZLX2PkLIqPH001gxIuWbdmXK8sxF%2BY6KFkcWW1vK3Ev12N9VvMozoNv5ODkt6a%2Bhe1BIMcEy97JzDieD%2FJhpqcHq2FVfQF1sDPT8%2FGcpDQz2gk8IGc6O%2FAm5uZBb1xt%2FO%2FhW3sJJNM8IaCY4yftDJ%2Big1z4gKjq0j6mPuKVuxtGzK4Nq1d3lh2K7WypqIvyKsLKm6xw8D6K6WYBF3fx1FWaIu48d08MEJ1C%2FnDJNHmdqv4sY2Y0ht2VY4XFoEtzfqkBICRrd4GlW2qNLzMNfnyIUGOqYBRsFCZ6ra81Fm7e%2FmQdONdhUsouYwY%2Bl1xHsih7IcV4oONRldQ8%2BNKo0Np0G1j2S12mHqiFRBNmXdq6fgf8kxTvGBxEBwxw%2BQbD14GiYPsCK7QXHNoqKwB9rS5SN79%2B5iKksRddktzBbb7eY15RvbM5oIhQmaDfH%2FfpJDXqHh96fu2om8LOUM40RtUi02Fjs7sHKKOt8KYHTPfYP3y7PIBoiumuL0FQ%3D%3D&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Date=20210529T131305Z&X-Amz-SignedHeaders=host&X-Amz-Expires=300&X-Amz-Credential=ASIAQ3PHCVTYWSWSU7AB%2F20210529%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Signature=63ab8df11e765f311b07418bab85aa0a7f239b212259fe15704698f1656d10e4&hash=7d33c25cb47f40c8442063303a83fd42ff8069503676d587af643252adf39f25&host=68042c943591013ac2b2430a89b270f6af2c76d8dfd086a07176afe7c76c2c61&pii=S1877042813024385&tid=spdf-b4b1232b-ddfb-4ac3-af88-2a9bd90cb3ad&sid=0bb83dd1763d604011680372c54776fdd907gxrqa&type=client)

**Section 9.3 - Conclusion**

The new concepts of such rotary intersections have continued to be developed through 2008 to 2012. The geometric concept requires less data observation in the field and therefore, its application as shown to be impactful to road works planning and design.

**References:**

[1] - Mahajan, S., Umadekarb, A. and Jethwac, K., 2013. New Concept of Traffic Rotary Design at Road Intersections. *ScienceDirect*, [online] Available at: <https://www.sciencedirect.com/science/article/pii/S1877042813024385> [Accessed 29 May 2021].